

Proposed Battery Charger System Standards

**Battery Charger Efficiency Committee
Workshop**
Hearing Room B

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History of Proposal

- Investor Owned Utility (IOU) CASE proposal was presented October 11, 2010
- Energy Commission staff used the CASE, DOE preliminary analysis, stakeholder input, and other sources to draft staff report, February 22, 2011
- Staff engaged stakeholders to investigate issues and concerns.
- Revised proposal released May 10, 2011



Changes: Scope

- Removed battery analyzers from scope
 - Not designed to be used repeatedly to recharge the same battery, difficult to test.
- Removed illuminated exit signs
- Removed high input voltage products
 - Connected to a typical power sources that are not evaluated in this pre-rulemaking
 - Intended to exclude products with 300V or more rms input voltage.



Changes: Scope

- Propose to alter exemption for FDA approved medical devices
 - Exempt class II and class III medical devices
 - Class I medical devices are ones that are: “not life-supporting or life-sustaining or for a use which is of substantial importance in preventing impairment of human health and which does not present a potential unreasonable risk of illness or injury.”



Changes: Definitions

Following definitions are added for clarity to the proposed regulations.

- Battery backup or uninterruptible power supply charger
- Battery analyzer
- Charge return factor; and
- Power conversion efficiency



Changes: Test Procedure

- In some cases battery chargers are one of several functions of a product
- Current test procedure requires non-charger features with a switch to be turned off
- Question remains for features that should not have a switch.
 - Which features? Add allowances?
 - Add procedure to remove features?



Changes: Test Procedure

- New proposal limits number of tests for large chargers by testing a “worst case scenario”
 - If product meets worst case scenario, it will comply with remaining scenarios
 - Reduces testing cost and burden
- Updates safety language
 - ensures that battery safety circuitry is used to safely discharge battery during testing



Changes: Test Procedure

- The test procedure contains reference voltages for various battery chemistries. The new proposal permits testing at the battery manufacturer's specified voltage.
- Manufacturers are now only required to test at 115 volts at 60 hertz for single phase input battery chargers.



Changes: Test Procedure

- Single port small chargers are required to be tested with the highest capacity and lowest capacity battery they are associated with
- Propose to specify that the highest maintenance, no battery, and 24-hour charge energy be reported from the two tests.



Changes: Multi-Port Chargers

- New approach to multi-port chargers
 - Multi-port charger tested with batteries in all ports. One test rather than three tests.
 - Multi-port chargers are treated as multiple single chargers with increased power and energy allowances proportional to the number of ports.



Changes: Inductive Chargers

- The language for inductive chargers was altered for 24 hour energy.
 - Intention was to require 1 watt or less average power draw.
 - 1 watt over 24 hours is 24 watt-hours which is the new requirement.



Changes: Large Charger Standards

- New proposal eliminates Tier 1 large charger standards
 - Gives manufacturers a single set of standards and two years to achieve them
- New proposal reduces power factor requirements from 0.95 to 0.90



Changes: Large Charger Standards

- Propose to increase the maintenance mode power to 20 watts from 10 watts
- Staff is also considering a scaling factor allowance similar to the approach for small battery chargers:
 - $10 + 0.0012 \times \text{battery capacity}$
 - Based on 2.5% battery energy input and 85% charge efficiency



Changes: Small Charger Standards

- Eliminated power factor requirements for all small battery chargers.
 - Harmonizes with DOE, as their TSD did not include power factor analysis or a power factor proposal.
- Scaling factor for maintenance mode added as discussed in March 3, 2011 workshop



Changes: Small Charger Standards

- New proposal combines maintenance and no-battery mode
 - Allows for tradeoffs between no battery and maintenance mode power
 - Gives manufacturers greater design flexibility
 - Better aligns with the DOE's single metric proposal



Changes: Small Charger Standards

- New proposal moves compliance date for non-consumer battery chargers to July 1, 2013
 - Longer design cycles with large number of specialized and low volume models.



Changes: Small Charger Standards

- New 24 hour energy equations for larger capacity batteries
 - Improves the discontinuity at the boundary between large and small chargers
 - Aligns with DOE TSD analysis
 - Old proposal required efficiency lower than the DOE baseline
 - New proposal requires efficiency between the DOE “improved” and “best in market.”
- Industry proposes under 5 watt-hour alternate equation



Changes: Certification

- The proposed regulations now include a certification element
 - Certification requires manufacturers to submit model numbers and test result data to confirm compliance, similar to requirements for other regulated appliances.



Changes: Certification

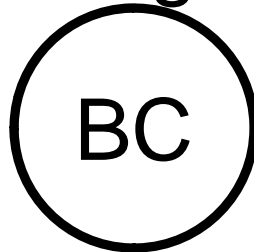
- Added group certification for large battery chargers
 - Decreases initial testing burden from certifying existing products to the more intensive large battery test procedure
 - Models introduced in the future will need to be individually tested.
- Determination of group:
 - Currently based on the battery capacity
 - Alternatively can be based on technology and maximum rated voltage



Changes: Labeling

- Requires markings to be a circle BC

- Example:



- Possibility of using a efficiency number scheme with I, II, III, and IV markings.
- Propose to allow labels on packaging for products with very small nameplates



Comment Process

- Comments due May 31, 2011
- Send hard copy to
California Energy Commission
Dockets Office, MS-4
Re: Docket No. 09-AAER-2
1516 Ninth Street
Sacramento, CA 95814-5512
- AND Send a digital copy to
docket@energy.state.ca.us
and include Docket No. 09-AAER-2 in the subject line

